

Evolutionary Special Interest Group of the Royal College of Psychiatrists



Evolutionary Psychiatry Special Interest Group (EPSIG)

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Notes from the editor

This is our 12th EPSiG newsletter. We have an interview with Professor Marco Del Giudice who's new book has just been published: *Evolutionary Psychopathology: a Unified Approach*, Oxford University Press, 2018.

He is also due to speak at our next symposium on 22nd March 2019, which will be the Third Evolutionary Psychiatry Symposium. We already have 6 confirmed keynote speakers (1 from Australia who is not only an academic but also a former service user, 2 from Europe, one from the USA and 2 from the UK). Like our previous symposia there will be ample time for discussion and audience participation. The aim is to maintain EPSiG's momentum in spreading the evolutionary message that we managed to achieve in our previous 2 successful symposia.

The 'Virtual Interview' with Professor Marco Del Giudice

conducted by Riadh Abed

1. What triggered off your interest in evolutionary theory in relation to psychiatry/psychology?

As a clinical psychology student I soon became fascinated with attachment theory. I did my undergraduate thesis on attachment styles and metacognition in children, and continued on the same track in graduate school (I was also very interested in emotions and emotional expressions). I was lucky to be exposed to the evolutionary side of attachment from early on; for this I am particularly indebted to Giovanni Liotti (who, sadly, passed away earlier this year). Giovanni was a brilliant clinician and an original thinker: many Italian psychologists have been introduced to evolutionary ideas through his work on attachment, consciousness, and motivation. From the "secure base" of attachment and emotions I started exploring more broadly, and soon I was reading quite a bit of evolutionary biology and psychology. I was struck by the explanatory power, depth, and aesthetic appeal of the approach. After years of studying disconnected topics and theories, behavior was starting to actually make sense!

At the beginning of graduate school, I was still not sure if research was my calling. I had an epiphany while reading a collected book of Robert Trivers' classic papers (*Natural selection and social theory*). The papers were bold, imaginative, inspiring; they showed how to use biological principles to make predictions and (with some luck) discover something entirely new. I knew I had found my career. I also realized I was missing a huge amount of background knowledge, so I started to train myself in genetics, physiology, theoretical biology, and so on. It's been a wild ride (and still is), but as a scientist I can't imagine doing anything more fun and rewarding.

2. Why, would you say, is evolution important to the understanding of mental disorder?

The concept of disorder is meaningless without that of function, but mainstream psychiatry leaves function undefined (as in the DSM) and fills the empty slot with intuitions and conventions. Competing approaches from RDoC to transdiagnostic models suffer from exactly the same problem. To me, the most important contribution of the evolutionary approach—not just in psychiatry but in medicine at large—is a general theory of biological function, which can be used to ground models of particular functions (for example bonding

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and attachment) and mechanisms (for example the stress response). A genuine theory of function opens up all sorts of interesting possibilities about the origin of disorders—mismatches, maladaptive learning, errors in defense activation, failed risky strategies, extreme trait expression, or manipulation by pathogens (among others). Ironically, many of these possibilities are virtually invisible without a functional lens, and one is left to define disorders by statistical or commonsense criteria that do little to advance understanding.

Also, a functional perspective emphasizes tradeoffs and conflicts—two concepts that are surprisingly underused in medicine—and can be quite useful for understanding why some interventions backfire or have unwanted effects. It is impossible to make sense of the new genomic data without invoking function and selection... the list could go on. To mention just one more thing: sex differences are extremely important for psychopathology, and cannot be understood in any depth without an evolutionary background.

3. Why have psychiatrists (and doctors generally) been slow to embrace evolutionary theory?

I'm not a psychiatrist, so I don't have an insider perspective on this question. As others have suggested, the scarcity of practical applications has likely played a role, but I don't think this is the full story. Take computational psychiatry, a fascinating field of research that (understandably) has yet to produce major applications for diagnosis and treatment. Compared with evolutionary psychiatry, computational psychiatry is being embraced much more quickly and enthusiastically, with space in mainstream outlets and a dedicated journal. I think this is an interesting case study. On the one hand, models in this area tend to focus on proximate mechanisms—for example dopaminergic pathways, decision-making processes, and patterns of neural activity. A lesson for evolutionists might be: never lose sight of the proximate questions, and strive to link ultimate explanations to well-defined mechanisms at the genetic, neurobiological, and cognitive level. On the other hand, I suspect that computational psychiatry is enjoying instant success precisely because of its limitations: most of the current models rest on intuitive ideas about disorders and dysfunctions, and don't require any deep rethinking of the discipline's background assumptions.

Another point to consider is the fragmentation of evolutionary psychiatry. The current state of the art offers many intriguing models and insights, but no big picture view and no answers to long-standing questions about classification and comorbidity. A coherent framework capable of tackling those questions would become much more attractive to outsiders.

4. Is it important to include evolutionary science into the undergraduate and postgraduate curriculum for doctors/psychiatrists and if so what would be the best strategy to achieve this end?

Of course. Again, I can't really speak about strategies because psychiatry is not my professional environment. I do know that colleagues in evolutionary medicine are making progress on this front (e.g., in the United States, evolutionary biology has been included in the Medical College Admission Test). This is encouraging, even if real changes are going to take a long time.

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- 5. In your view why is there still no evolutionary psychiatry university departments and no academic journals dedicated to the subject whereas there are many dedicated to evolutionary psychology?**

I guess it boils down to numbers. Without a critical mass of researchers and students it is impossible to sustain a high-quality journal or training program. And even in psychology there are few places with full-fledged evolutionary programs (as opposed to individual researchers or labs). When a field is so small and scattered, well-organized conferences can be quite useful to develop networks, build morale, and attract new members.

- 6. How can evolutionary psychiatry fend off the accusations of promulgating ‘just so’ stories?**

I don't think it can because, at this point, those who keep making that accusation are either willingly misinformed or intellectually lazy—and more often than not have an ideological agenda. The “just so story” bit was already a rhetorical sleight of hand in 1978; forty years later I find it impossible to take it seriously. The field should ignore this brand of sterile criticism and focus on producing quality science. Successful disciplines are happy to embrace the full spectrum of scientific styles, from careful measurement and rigorous hypothesis-testing to abstract theorizing and creative speculation. The goal should be to achieve a productive mix (including a certain amount of tension), not to impose artificial restrictions. Note that this is not a call to let go of rigor or a justification for sloppy theorizing. But becoming overly cautious for fear of criticism is not a good idea, and certainly not a recipe for discovery.

- 7. Why have there been so few interventions in psychiatry based on evolutionary science?**

This is a complex question that can be answered on many different levels. To begin, it's easy to underestimate the contributions of evolutionary science to clinical practice. Many child and adult therapists adopt elements of attachment theory, which is built on ethological and evolutionary concepts. Research on neurotransmitters is rooted in animal behavior and comparative biology. Of course, these are examples of indirect influences that flow through layers of theory and research before they reach the clinic. But we should consider the possibility that, in the end, many applications of evolution to psychiatry (and medicine for that matter) will be similarly indirect. To make an example from my own research, I am working on ways to rethink the classification and subtyping of disorders using functional concepts (more on this later). To the extent that the model I have proposed proposing ends up informing research on comorbidity and disorder subtypes, there will be cascading effects that will likely impact clinical practice... in a few decades, and in ways that are almost impossible to foresee. We should strive to make people aware of how concepts and ideas they take for granted are grounded in past evolutionary research.

From another point of view, it is also the case that psychotherapies and behavioral interventions all rely on a limited set of “building blocks”. Moreover, many of those building blocks—e.g., meditation, relaxation, exposure, role-playing, active imagination, cognitive restructuring—have been around for millennia in one form or another. In psychotherapy, it is incredibly hard to come up with genuinely new techniques that are also effective (and not

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bogus). On this background, I believe that an evolutionary approach has a lot to offer, but not (or not only) in the sense of suggesting novel techniques. Instead, evolutionary models of both psychiatric conditions and normal functioning (motivation, emotions, developmental stages, cognitive processes, individual differences...) can be extremely useful to contextualize the patient's suffering, explain what is going on in the treatment (to both patients and clinicians), select the most effective tools for the job, and add depth and meaning to clinical interventions. Paul Gilbert's compassion focused therapy is an excellent illustration. More generally, evolutionary notions can be amazing psycho-educational tools—just consider how couple and sex therapy is facilitated by having a realistic model of men's and women's mating psychology. A grounded understanding of human nature can also inform clinicians on the likely effectiveness (or lack thereof) of new and untested interventions. For example, I coauthored a paper with Bruce Ellis and others in which we used biological insights on risk-taking in adolescence to evaluate various types of interventions and their potential drawbacks.

But let's not get stuck in the present. Sooner or later the range of potential interventions will broaden beyond what is feasible—or thinkable—today. What happens when personalized drugs can be administered in real time with adaptive feedback from sensors? When we learn to directly regulate the mechanisms of brain plasticity? Or when genome editing becomes a practical option? It will rapidly become impossible to evade the hard questions about function and dysfunction, and the only way to answer them will be to adopt an evolutionary perspective. The golden days of evolutionary psychiatry are ahead of us.

8. A lot of your evolutionary work is based on Life History Theory (LHT). Do you consider this to be your most important contribution to evolutionary psychiatry/psychology and what impact do you believe the incorporation of LHT into mainstream psychiatry will have on our thinking about mental health and mental disorder?

It's hard to predict what will be influential in the long run. Surely the life history framework has been my most systematic contribution so far, to the point that it has turned into a fairly substantial book (*Evolutionary psychopathology: A unified approach*). Life history theory is useful because it focuses attention on the fundamental trade-offs in the life of an organism—reproducing early or late, investing in mating or parenting, and so on. A lot of narrower phenotypes are affected by those trade-offs, and for this reason the idea of a strategic continuum from “fast” to “slow” has remarkable heuristic power. In psychopathology, it can be used as a high-level map of the patterns of individual differences that underlie the risk for mental disorders and generate the large-scale structure of comorbidity. (Note that, in the latest version of the framework, the fast-slow distinction is supplemented by a largely independent dimension of “defense activation” for conditions marked by anxiety, depression, fear, and distress.) If the trick works, you end up with a principled way to identify clusters of functionally related conditions and meaningful subtypes within diagnostic categories. Another bonus of a life history perspective is that is intrinsically developmental. Too much evolutionary work in psychology and psychiatry lacks a developmental dimension, and life history theory can be a useful corrective. In short, the promise of a life history approach is to bring conceptual integration to psychopathology and provide the first viable evolutionary

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taxonomy of mental disorders. These are ambitious but vital goals, and in my opinion are worth a serious try.

Since we are on the topic of life history theory, I would like to add a cautionary note. There is still a lot we don't know about life history evolution, and one should be mindful that applications to humans are based on the approximate results of highly simplified models. Life history theory should come with a warning sticker: handle with care! For example, there are disagreements about the best way to link personality to life history strategies, and quite a bit of uncertainty about the size and structure of environmental effects (e.g., early stress). Individual differences are obviously much richer and nuanced than suggested by a simple fast-slow distinction. In my book, I suggest that the standard concept of a fast-slow continuum can be supplemented with that of differentiated "profiles" within fast and slow strategies. Humans have complex social systems and multiple ways of achieving life history goals. Mating effort can take the form of risky agonistic competition but also that of creative courtship; parental effort can flow through affectionate caregiving but also through indirect resource provisioning. Different specializations within this landscape correspond to somewhat different personality and cognitive profiles—for example, affective empathy and agreeableness are essential for affectionate caregiving but not for indirect provisioning. This is my current attempt to overcome the limitations of the standard life history model without sacrificing its heuristic value. But there is a lot more work to be done.

9. What aspect(s) of your evolutionary work are you most proud of?

I especially like it when I succeed in bridging ideas across disciplines and research areas (hopefully without committing major blunders!). Part of me enjoys integration and synthesis; another seeks the thrill of coming up with novel, surprising hypotheses or reinterpretations of existing knowledge. I've been lucky to be able to do both, and explore many fascinating topics along the way.

10. What advice would you like to offer to your fellow evolutionists who are psychiatrists?

Psychiatry has a privileged interface with neuroscience, computational modeling, and genomics; the connections are only going to become stronger in the future. There are incredible opportunities to "contaminate" these disciplines with evolutionary ideas, but also to use their proximate insights to enrich and constrain evolutionary theorizing. My other bit of advice is to interact more with colleagues in psychology and anthropology. For example, vanishingly few psychiatrists attend the conferences of the HBES (Human behavior and Evolution Society), and I think this is a missed opportunity. To those who worry that evolutionary psychology is just about questionnaires, I say think again (and check out this year's conference program, or the latest issues of *Evolution and Human Behavior* and *Adaptive Human Behavior and Physiology*). The field is bustling with work on physiology, neurobiology, genetics, even immunology—there are plenty of opportunities for productive conversations.

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An interesting article on teleology

Creationism and conspiracism share a common teleological bias

Pascal Wagner-Egger^{1,*}, Sylvain Delouvée², Nicolas Gauvrit³, and Sebastian Dieguez⁴

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Teleological thinking, the attribution of purpose and a final cause to natural events and entities, has long been identified as a cognitive hindrance to the acceptance of evolution, yet its association to beliefs other than creationism has not been investigated.

Teleology is a reason or explanation for something in function of its end, purpose, or goal.

It is derived from two Greek words: telos (end, goal, purpose) and logos (reason, explanation). A purpose that is imposed by a human use, such as that of a fork, is called extrinsic. Natural teleology, common in classical philosophy but controversial today, contends that natural entities also have intrinsic purposes, irrespective of human use or opinion.

For instance, Aristotle claimed that an acorn's intrinsic telos is to become a fully grown oak tree.

Though ancient atomists rejected the notion of natural teleology, teleological accounts of non-personal or non-human nature were explored and often endorsed in ancient and medieval philosophies, but fell into disfavour during the modern era (1600–1900). In the late 18th century, Immanuel Kant used the concept of telos as a regulative principle in his Critique of Judgment.

Contemporary philosophers and scientists are still discussing whether teleological axioms are ever useful or accurate in proposing modern philosophies and scientific theories. For instance, in 2012, Thomas Nagel proposed a non-Darwinian account of evolution that incorporates impersonal and natural teleological laws to explain the existence of life, consciousness, rationality, and objective value. Among Nagel's claims are that evolution is wrong because:

1. We don't understand the origin of life
2. We don't understand the evolution of consciousness
3. There are objective factors about morality, and evolution can't explain them (Nagel is what philosophers call a "moral realist")
4. A reductionist and materialist program won't suffice to understand evolution, ergo
5. There is a missing factor, and that factor is teleology.
6. That is, evolution is directed toward certain goals (e.g., consciousness) by a process we don't understand

Nagel's teleological biology appears heavily human-centric or at least animal-centric. Organisms, it seems, are in the business of secreting sentience, reason, and values. Real biology looks little like this and, from the outset, must face the staggering facts of organismal diversity. There are millions of species of fungi and bacteria and nearly 300,000 species of flowering plants. None of these groups is sentient and each is spectacularly successful. Indeed mindless species outnumber we sentient ones by any sensible measure (biomass, number of individuals, or number of species; there are only about 5,500 species of mammals). More fundamentally, each of these species is every bit as much the end product of evolution as we are. The point is that, if nature has goals, and it certainly seems to have many, being human or conscious would appear to be fairly far down on the list.

Since the "Novum Organum" of Francis Bacon, teleological explanations in physical science tend to be deliberately avoided in favour of focus on material and efficient explanations. Final and formal causation came to be viewed as either false or too unquantifiable. Some disciplines, in particular

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within evolutionary biology, continue to use language that appears teleological when they describe natural tendencies towards certain end conditions. While some argue that these arguments can be rephrased in non-teleological forms, many hold that teleological language cannot be expunged from descriptions in the life sciences. Even Richard Dawkins sometimes slides into teleological phraseology while acknowledging this accepts that it is metaphorical or just the way we explain things in everyday language.

In modern science, explanations that rely on teleology are often, but not always, avoided, either because they are unnecessary or because whether they are true or false such as the existence of an intelligent designer, the way it is formulated is beyond the scientific capacity to investigate and therefore not characterisable in any objective way. If a god is beyond detection, they are beyond detection! It is also a lazy way of creating a final cause i.e. God did it! without any need for evidence. That is not science. Psychiatrists of teleological persuasions might as well claim a demon causes psychosis, and “scientists cannot prove it did not!” being used as the evidence and argument that demonic possession is a valid theory of psychosis.

In the abovementioned article the authors show that conspiracism - the proneness to explain sociohistorical events in terms of secret and malevolent conspiracies - is also associated to a teleological bias. Across three correlational studies ($N > 2000$), they found robust evidence of a teleological link between conspiracism and creationism, which was partly education, agency detection, analytical thinking and perception of randomness. As a resilient ‘default’ component of early cognition, teleological thinking is thus associated with creationist as well as conspiracist beliefs, which both entail the distant and hidden involvement of a purposeful and final cause to explain complex worldly events.

Although teleological thinking has long been banned from scientific reasoning, it persists in childhood cognition, as well as in adult intuitions and beliefs. Noting similarities between creationism (the belief that life on Earth was purposefully created by a supernatural agent) and conspiracism, they sought to investigate whether teleological thinking could underlie and associate both types of beliefs. Collectively, these results identify teleological thinking as a new predictor of conspiracism, independent of agency perception, anthropomorphism, science rejection, analytical thinking and randomness perception. As a finalist and purpose-driven view of the natural world, teleological thinking has long been associated with creationism and identified as an obstacle to the acceptance of evolutionary theory .

The authors suggest that this powerful cognitive bias extends to social and historical events, and nowadays to conspiracy narratives. As such, creationism could be seen as a conspiracist belief system (indeed, involving the ultimate conspiracy theory: the purposeful creation of all things , and conspiracism as a type of creationist belief targeting socio-historic events (e.g. specific events have been purposefully created by an all-powerful agency).

Because teleological and animist thinking are part of children’s earliest intuitions about the world and are resilient in adulthood , they thus could be causally involved in the acquisition of creationist and conspiracist beliefs. However, the results do not rule out the possibility that acceptance of such beliefs could, conversely, favour a teleological bias. Yet, in both cases, the ‘everything happens for a reason’ or ‘it was meant to be’ intuition at the heart of teleological thinking not only remains an obstacle to the acceptance of evolutionary theory, but could also be a more general gateway to the acceptance of antiscientific views and conspiracy theories.

The full article is well worth reading as is the original paper.

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From an EPSIG perspective Teleonomy as a concept is far more useful. Teleonomy is the quality of apparent purposefulness and of goal-directedness of structures and functions in living organisms brought about by selection processes. Teleonomy is contrasted with teleology, where the latter is understood as a purposeful goal-directedness brought about through human or divine intention. Teleonomy derives from evolutionary history, adaptation for reproductive success, and/or the operation of a selection process to produce apparent a priori design or purpose.

Future meeting dates:

EPSIG 3rd Symposium will take place on 22 March, 2019 at the College (See full program below)

EPSIG AGM and Half-Day Scientific Meeting will take place at the College on 31 May 2019 (Details will be circulated nearer the time).

Resources and EPSIG Website

The link to the EPSIG web pages that contain a range of resources is below:

<http://www.rcpsych.ac.uk/workinpsychiatry/specialinterestgroups/evolutionarypsychiatry.aspx>

Articles for the newsletter

We welcome submissions for future newsletters in the form of articles, reviews and interviews. Correspondence: Replies, suggestions and clarifications on articles are welcomed and may be printed/included in our next newsletter.

Also, we welcome brief reviews of seminal articles where there is an evolutionary or other relevant conceptual angle (please include the weblink if the article is open access).

Please send any submissions to me at: - paul.stjohnsmith@hpft.nhs.uk or paulstjohnsmith@hotmail.com

Evolutionary Special Interest Group of the Royal College of Psychiatrists

3rd International Symposium

of the Evolutionary Psychiatry Special Interest Group (EPSIG)

Friday 22 March 2019

Royal College of Psychiatrists, 21 Prescot Street London E1 8BB

Time	Session
9.00-9.30	Registration, welcome and coffee
9.30-9.35	Welcome Dr Riadh Abed EPSIG Chair
9.35-12.20	Morning Session Chair: Prof George Ikkos
9.35-10.20	Keynote: Human ethology and the understanding of personality disorder Dr Gerhard Medicus (Austria)
10.20-10.35	Q&A
10.35-11.20	Keynote: Surviving at the cost of suffering: The mixed blessings of our evolved neuroplastic brains Dr Haley Peckham (Australia)
11.20-11.35	Q&A
11.35-11.50	Coffee Break
11.50-12.35	Keynote: Form follows function: An evolutionary model of the structure of psychopathology Prof Marco Del Giudice (USA)
12.35-12.50	Q&A
12.50-13.45	Lunch
13.45-17.30	Afternoon Session Chair: Dr Paul St John-Smith
13.45-14.30	Keynote: Can evolutionary thinking shed light on gender diversity: A view from the clinic Bernadette Wren (UK)
14.30-14.45	Q&A
14.45-15.00	Coffee Break
15.00-15.45	Keynote: An evolutionary model of depression Prof Markus Rantala (Finland)
15.45-16.00	Q&A
16.00-16.45	Keynote: Depression: What (if anything) is it, and what are its evolutionary origins? Prof Daniel Nettle (UK)
16.45-17.00	Q&A
17.00-17.30	General Discussion and Close

The conference dinner will be at 19.00. This will need to be booked separately. Venue TBC

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Short Biographies of the Keynote speakers

Marco Del Giudice is a professor of psychology at the University of New Mexico. His work explores a broad range of topics at the intersection of human behaviour, evolution, and development. Specific research areas include stress neurobiology, developmental plasticity, sex differences in personality and social behaviour, and evolutionary models of mental disorders. His book titled 'Evolutionary Psychopathology' was published by OUP in 2018.

Gerhard Medicus is a behavioural biologist and evolutionary psychiatrist. He retired from clinical practice in 2015. Since 1988 he has been associated with the Research Unit for Human-Ethology of the Max-Planck-Institute for Behavioural Physiology in Andechs and Seewiesen, Munich. Dr Medicus has published original work in the areas of evolutionary biology as well as evolutionary psychopathology and psychiatry. His book 'Being Human - Bridging the Gap between the Sciences of Body and Mind', published in 2017, summarises his scientific work.

Daniel Nettle is Professor of Behavioural Science at Newcastle University. His work, which takes a comparative and evolutionary perspective, covers a number of topics in health, psychological well-being, emotion, and decision-making. He has published widely in all these areas. His book titles include: Happiness, Personality and Evolution and Genetics for Psychology.

Haley Peckham divides her time between Spectrum, a statewide specialist service for people diagnosed with Borderline Personality Disorder, the Centre for Psychiatric Nursing at the University of Melbourne and her freelance training work and, is also training to be a psychotherapist. She has worked as a youth worker, foster care support worker, trained as a mental health nurse and counsellor as well as in the therapeutic use of the arts. Dr Peckham combines her knowledge in the fields of neuroscience evolution and psychotherapy with her clinical experience of being a nurse and her personal experience of neuroplastic change, recovering from the effects of complex trauma through the experience of psychotherapy.

Markus J Rantala is a university lecturer at the department of Biology in University of Turku, Finland. He has doctoral degrees in both biology (2002) and psychology (2014). He has published more than 180 scientific articles in peer-reviewed journals. He has recently established an evolutionary psychology program in 2014 at University of Turku. His book 'Evolutionary Psychiatry and Depression' was published in Finnish in 2018.

Bernadette Wren trained as a Clinical Psychologist and Systemic Psychotherapist, and was until recently trust-wide Head of Psychology at the Tavistock and Portman NHS Trust. She has degrees in philosophy and psychology and a continuing interest in the relevance of each discipline to the other. She works clinically with gender diverse young people and their families in the Trust's *Gender identity Development Service* and has published several widely-cited papers based on that work. She has been a Teaching Fellow in the Dept of Health and Human Sciences, Essex University, and an Honorary Senior Research Associate in the Dept of Clinical, Educational and Health Psychology at UCL.